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SCIENCE NEWS LETTER

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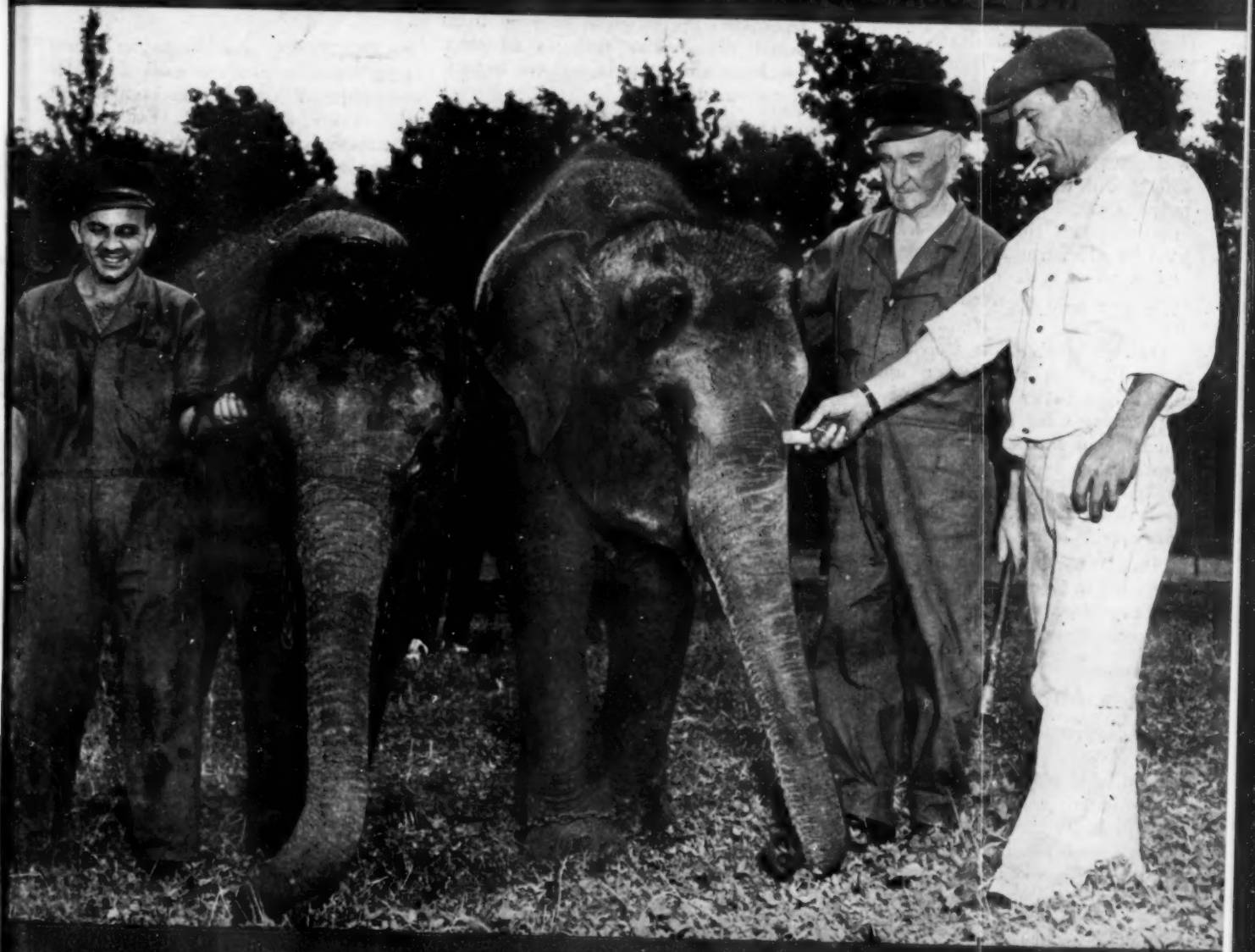

Patsy and Peggy

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A SCIENCE SERVICE PUBLICATION

HORTICULTURE

Sugar Cane Weed Conquered by 2,4-D

➤ CONQUEROR of many a tough weed in this country, 2,4-D has demonstrated its power over even tougher weeds in the tropics. Prof. Kenneth V. Thimann of Harvard, just returned from Cuba, tells of successful experiments with this chemical killer against the most troublesome of cane-field weeds, a woody plant of the legume family known as *Aroma marabu*. This weed has hitherto defied hoeing and mechanical cultivation, which merely chop its tops off but leave the roots alive and ready to throw out new sprouts.

Best success with 2,4-D was scored with the sodium salt of the compound, with one-half per cent of Carbowax 1500 added to help the spray to stick to the leaves. 2,4-D ester in oil was also effective. Both these compounds were used in three-tenths per cent concentration, which is three times the strength commonly used on weeds in this country.

Another troublesome tropical woody weed that can be knocked out with 2,4-D is a botanical cousin of poison ivy, having quite similar effects on the human skin. Botanists call it *Comocladia dentata*, but its common name in Cuba is "guao". "Guao" is pronounced (approximately) "WOW!" and in everyday speech means just about that.

Prof. Thimann, reporting briefly on the work in *Science* (July 25), states that the experiments are being continued.

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PSYCHIATRY

Reflex Method Tests For Serious Brain Damage

➤ IF YOU CAN'T be taught to make your mouth water at sight of a juicy beefsteak, there may be something wrong with your brain.

This is the basic method used in a kind of speedy examination that physicians can now use in searching for serious brain damage.

The new 30-minute method was demonstrated at the Fifth International Congress of Pediatrics in New York by Dr. W. Horsley Gantt, of Phipps Psychiatric Clinic, Johns Hopkins Hospital, Baltimore, Md.

Your mouth waters at the taste of a juicy beefsteak. That is known as an inborn reflex. But even young babies can learn to have the same mouth watering or start sucking movements at just the sight of food. This acquired reflex is known as a conditioned reflex.

The ability to form new conditioned reflexes depends on the action of the higher nervous centers and especially in mammals upon the cortex. The higher in the animal scale, the more does this ability to form conditioned reflexes depend upon the brain cortex.

Inability to form new reflexes points to serious damage to the brain cortex—perhaps a brain tumor. It is also possible through use of the conditioned reflex technique to distinguish between functional disturbances such as neuroses, psychoses and hysteria and the organic disturbances.

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GENERAL SCIENCE

Science Foundation Bill About To Become Reality

➤ CONGRESS has voted a National Science Foundation (See SNL, July 26) after nearly two years of planning and debate. President Truman was expected to sign the new foundation into being this week.

Heading the foundation, under terms of the compromise conference report passed by both houses of Congress, will be a 24-man board of part-time policy-makers appointed by the President with the approval of the Senate.

The director of the foundation will be appointed by the board. The directorship, an important new post in American science, will be a full-time job with an annual salary of $12,000.

Planned as a peace-time successor to the World War II Office of Scientific Research and Development, the foundation will be the agency for administering federal support of science. Since the end of the war, OSRD has been going out of business, and federal support of science has been left chiefly in the hands of the Army and the Navy. The military program in science has included not only the development of weapons but also the support for fundamental research. Most of this latter program will now move over to the new foundation.

Work of the foundation will be divided into special divisions. Social sciences, originally urged by many scientists as one of the divisions, are not included in the bill passed by Congress. In addition to the divisions created within the foundation, special commissions for attacking cancer, heart diseases and poliomyelitis are authorized, and others may be added.

Basic research will be emphasized in the foundation program, but foundation's jobs will be done through grants, loans, scholarships and other aids to scientists and laboratories, rather than in new laboratories actually directed by the foundation.

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MEDICINE

Headache and Spasm Are Early Symptoms of Polio

➤ DOCTORS should diagnose and treat infantile paralysis early in order to reduce discomfort and crippling of the victims, Dr. John F. Pohl of the Elizabeth Kenny Institute, Minneapolis, urges in a report appearing in the *Journal of the American Medical Association* (July 26).

Headache is the most distinctive initial complaint. This is usually a severe, generalized, unrelenting type, which is rare in the illnesses of childhood.

Spasm, which is shortening of the muscles, appears early and is present in every case, Dr. Pohl also found in studying 1,125 cases of poliomyelitis during the 1946 epidemic. Paralysis is not a common early symptom, however.

"Symptoms and observations are sufficiently characteristic to enable the diagnosis to be established in most patients within 24 hours of the onset," Dr. Pohl said. "The study also discloses that paralysis is not a useful diagnostic sign because paralysis or weakness of the muscles is not a common early event and in a considerable number of cases does not occur at all. To await the appearance of paralysis to confirm the diagnosis or to begin treatment is inadvisable. It is now recognized but should be emphasized, that patients without paralysis are often seriously ill and may become crippled from conditions other than paralysis which affect the muscles. All cases should be brought under treatment as soon as possible."

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United States imports from Argentina *hides* and *skins* of animals not known here; they include carpincho, a large rodent; jabali, a wild boar; lagarto, a large lizard; vibara and boa, snake; and lobo marino, a seal.

OPTICS

Ultraviolet Searchlights

Planes were not equipped with this light during the war because some can see it. Plan was perfect in theory but impractical.

➤ A WAR-DEVELOPED plan for landing planes on carriers in pitch-black darkness by the use of ultraviolet "invisible" light was never put into actual use because it was discovered that a few eyes can see this so-called invisible light.

The plan, perfect in theory but impractical in war, was revealed by Dr. E. D. Tillyer of the American Optical Company. In the plan, airplanes were to be equipped with searchlights sending out only ultraviolet rays. When returning to their mother-ship these rays would be used in locating the carrier.

The carriers were to be equipped with special reflectors each with a fluorescent button which the ultraviolet rays would cause to glow brilliantly. The diffused fluorescent light from each button would be collected by the complex curves of the mirror and concentrated through a special lens that would send a very narrow beam back to the plane.

This returning visible beam is so narrow that an enemy pilot, flying wing to wing beside the landing plane, could not see the fluorescent light outlining the carrier. Its spread after traveling more than a mile was only a few feet.

Tests made by University of Rochester scientists, who developed the reflectors, revealed that a few persons have eyes that can see the ultraviolet rays used although they are invisible to most eyes. An enemy pilot might happen to have this unusual ability. In that case he could see the beams sent out by the plane and locate the plane. However, he could not see the outline of the carrier unless he were directly within the path of the returning fluorescent beams.

Although the Schmidt-type correcting lens developed for use in the ultraviolet reflector could not, from a war-time standpoint, be used for that purpose, it is used in another instrument still held a secret by the Navy. A similar lens has been developed by American Optical scientists for use in television reception.

Ultraviolet waves are similar to ordinary light waves but are of a different length. They are beyond one end of the so-called visible spectrum, with its seven primary colors. Invisible infra-red rays are just beyond the other end. These are often called heat waves, and they were used for "seeing" in the dark in the Army's sniperscope. By electronic means they made visible an object otherwise hidden to the eye.

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VETERINARY MEDICINE

Cleaning of Cars Combats Foot-and-Mouth Disease

➤ FOOT-AND-MOUTH disease of cattle is not going to ride the rails, if the Mexico-U. S. combat team can help it. Cattle cars reaching the yards in Mexico City get a three-stage going-over that cleans them thoroughly and destroys any possible lingering virus before they are used again.

First, a cleaning force removes all litter and manure. Then the cars are shifted to another siding, where they are thoroughly hosed down. After drying, they are disinfected inside and out with a spray of caustic soda.

Cars that have been thus treated are sealed and placarded as safe for further use, then sent out into the cattle country again. Three technicians, one of them Mexican, the others American, personally supervise the cleaning and disinfection of every car.

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GENERAL SCIENCE

Human Resources Committee Has Psychologist as Head

➤ DR. DONALD G. MARQUIS, chairman of the department of psychology at the University of Michigan and president of the American Psychological Association, has been named chairman of a committee on human resources of the Joint Research and Development Board.

Board Chairman Vannevar Bush, president of the Carnegie Institution of Washington, said the new committee will study the human element in both military problems and civilian defense.

Members of the committee in addition to Dr. Marquis are: Dr. C. L. Shartle, executive secretary of the personnel research board, Ohio State University; Dr. Frederick F. Stephan, department of sociology, Cornell University; Dr. Samuel A. Stouffer, department of social relations, Harvard University; Maj. Gen. Fred L. Anderson, Maj. Gen. Raymond W. Bliss and Col. Fred C. Milner, representing the U. S. Army; and Dr. A. H. Hausrath of the Office of Naval Research, Rear Adm. J. W. Roper and Capt. D. T. Eddy, representing the U. S. Navy.

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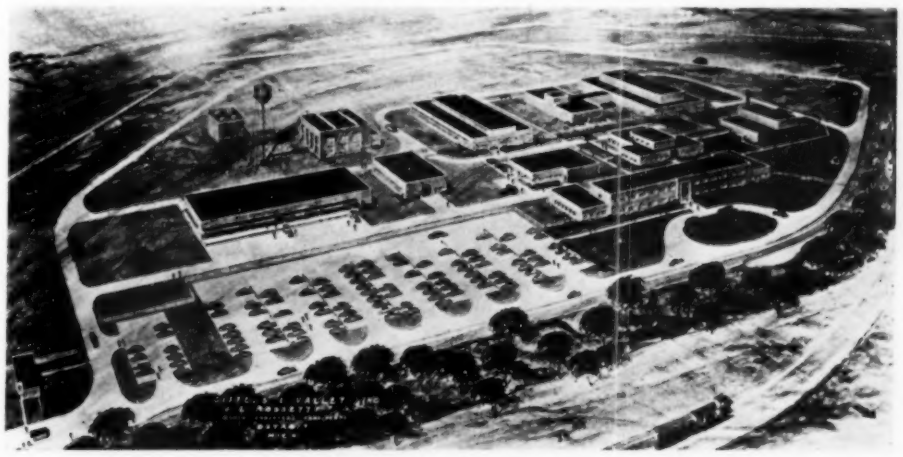

ATOMIC ENERGY FACILITY—Part of this structure not shown in the architect's sketch is to be underground in order to obtain necessary conditions for certain types of atomic energy research. Constructed of red brick, the building will be completed in Miamisburg, Ohio, early next year.

ANTHROPOLOGY

Panchito Visits New York

► PANCHITO HAS MADE his first trip to New York in the company of Dr. T. D. Stewart of the U. S. National Museum in Washington. Panchito grinned, but he wouldn't say anything about the skyline. For Panchito has been dead some 15,000 years; he is the most famous of early American skeletons.

"Panchito" is the nickname which Mexicans have bestowed upon Tepexpan man, who is quite a popular personage among his present-day compatriots. Quite properly so, for he has a number of unique distinctions: He is certainly the earliest known Mexican, possibly the earliest known North American. He is the only American thus far found who died in the company of a herd of native American elephants. Finally, he is the only prehistoric man anywhere whose remains were discovered through the use of the same geophysical methods that are used in prospecting for oil and minerals.

Since the arrival in this country of this highly important skeleton, some of Panchito's secrets have been won from him by Dr. Stewart and Senor Javier Romero, Mexican scientist who carried the bones on their long plane flight from Mexico City to Washington.

Senor Romero has been reconstructing the long bones of his arms and legs, which were more or less cracked up when found. There are formulae which enable anthropologists to estimate a dead man's probable height in life from measurement of these bones. Panchito presents a riddle, for his forearm bones indicate that his height was about five feet eight inches, whereas his leg-bones indicate a height of only five feet five or six inches. Seemingly Panchito was a short man with long arms—good lightweight fighter, maybe.

Dr. Stewart has made a plaster-of-Paris cast of the interior of the skull, on which studies of brain size and shape will be made. Thus far it is possible to state only that this early American had a good brain, with sharply-marked convolutions.

While in New York, Panchito is making his headquarters with the Viking Foundation, which sponsored the search over an ancient lake bed near the town of Tepexpan that brought the now famous bones to light. The search was led by Dr. Hellmut De Terra, Viking Foundation anthropologist, Dr. A. V. R. Arellano of the Geological Institute of Mexico, and Dr. Hans Lundberg, Canadian geophysicist.

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MEDICINE

Cancer Weapon Hunt Goes to Deep Sea

► SCIENTISTS are turning to the deep sea for possible weapons in the war on cancer.

Two researchers in the University of California's Scripps Institution of Oceanography have found that marine microorganisms cause some destruction of hydrocarbons which have been found to produce cancer tumors in mice.

Benzanthracene, dibenzanthracene and other cancer-producing hydrocarbons were attacked and oxidized considerably by the action of a culture of deep-sea bacteria under controlled laboratory conditions.

"The findings from these cursory investigations have been presented with the hope of stimulating further research into the possible application of bacteria or their products to the treatment," explains Dr. Claude E. ZoBell, associate professor of marine microbiology, who led the investigation.

Collaborating with Dr. ZoBell was Frank D. Sisler, research assistant.

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EDUCATION

Military Equipment Pays Cost of Foreign Study

► MILITARY EQUIPMENT left on a hundred beachheads will soon be paying the cost of study and research by Americans in some 22 countries.

Surplus U. S. material sold abroad will be used under the Fulbright law passed last year to finance educational grants for U. S. citizens in cooperating countries. The State Department is ready to receive applications from those who want to study abroad, although actual inauguration of the program may be some months in the future, due to conditions abroad. Already 12,000 have applied, 5,000 of whom are veterans.

In Italy, the United Kingdom and China there will be a million dollars available annually for the next 20 years. Nineteen other countries will have lesser amounts for educational exchanges.

The Fulbright law money can not be spent within the United States, but nations can arrange to defray the travel of their students to and from the borders of the United States if that travel expense can be paid in their own currency.

Most fruitful use of the money is expected to be for graduate study and investigations. Experience has shown that foreign study is most profitable to the student after regular college work has been completed.

One member of the President's board of ten to select students is Dr. Ernest O. Lawrence, Nobelist in physics who invented the cyclotron in which the atomic bomb element plutonium was first made.

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AGRICULTURE

2,4-D Destroys Cotton

Chemical makes no distinction between weeds and certain crops. Farmers learned its power by losing cotton crops when dusting rice in Texas.

➤ THE WONDER weed-killer 2,4-D can be a dangerous enemy as well as a useful ally. It can kill your plant friends as well as your foes in the plant world if you do not handle it with care. That is the lesson learned at a high cost in valuable cotton in Texas.

"Extensive damage" to Texas cotton fields from the use of 2,4-D on nearby rice was caused by faulty equipment used in dusting the chemical from the air, U. S. Department of Agriculture officials believe.

Planes carrying the potent dust over the rice field used cotton dusters built for dusting cotton fields against boll weevil, field reports to the Department of Agriculture indicated. When the plane circled back after making "runs" on the rice fields, some of the 2,4-D fell on cotton fields several miles away.

2,4-D will not harm rice, other small grains or the grass on your lawn. But it will kill not only weeds but other broad-leafed plants including cotton, soybeans, potatoes, and most other vegetables and flowers.

Don't Dust from Air

Scientists have warned against dusting 2,4-D from the air. In some cases, the dust will be carried to cotton and other crops by the wind. A better method is to spray rice fields with a liquid solution of 2,4-D in water or an oil.

Recent experiments have shown that oil is better than water for 2,4-D solutions, L. W. Kephart of the Department of Agriculture said, because water is more likely to drift, evaporate or wash off the plants which are sprayed.

The latest 2,4-D incident in Texas is only one of several which have been reported. But a protest from Texas cotton farmers brought a resolution from the U. S. House of Representatives calling on Secretary of Agriculture Anderson to take action to prevent further losses.

Department of Agriculture spokesmen blamed the damage to Texas cotton on "carelessness", but they admitted that the department has not issued any publications concerning the use of 2,4-D on rice fields. A bulletin reported to have been issued by the Louisiana Experiment Station even showed on the cover a plane dusting the chemical.

Only official action planned so far is a press release warning against aerial dusting, it was learned. It is a local matter as far as regulations go, and several California counties are understood to have laws against dusting from the air.

2,4-D is a two-faced chemical with only a short history. On your lawn or in a rice or other small-grain field, the chemical will kill the weeds. But it will also kill other broad-leafed plants such as shrubs or flowers around your home or other types of farm crops.

Chemically 2,4-D is 2,4-dichlorophenoxyacetic acid. It was first used during the war and got some attention from chemical warfare experts as a possible killer of enemy plants. One of the plants which a weapon was sought against was rice, a big and important crop of the Japanese, but 2,4-D has proved to help rice by killing the weeds without harming the rice. On the other hand, 2,4-D could be a biological warfare weapon against many other important food crops such as potatoes.

If you want to kill dandelions and other weeds in your lawn use 2,4-D, but use it with care. Do not use a dust that will blow over on your flowers or garden, or your neighbors', and do not use 2,4-D on any windy day.

The Texas cotton losses have produced one surprising new bit of information about 2,4-D. Young cotton plants hit by the weed-killer are living through the attack where some of the older, better developed plants are killed. This is not what some scientists expected.

Used with care, 2,4-D is an important aid to growing a good lawn or better crops, but it can do much harm if it is not well controlled.

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CHEMISTRY

Fermentation for Vinegar

➤A METHOD for making vinegar that eliminates the present use of shavings or charcoal as substrates for the fermenting bacteria, developed by J. J. Mackin of Green Bay, Wis., is covered by patent 2,423,897. The alcohol solution, with the bacteria already in it, is kept suspended in turbulent air as mist-droplets while fermentation proceeds.

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ARCHAEOLOGY

Many-Storied Casa Grande

➤ THE FAMOUS Casa Grande ruin in Arizona indicates that it was a many-storied building resembling an apartment house with roof terraces and a few open windows; its thick walls were made of mud, patted into place by hand.

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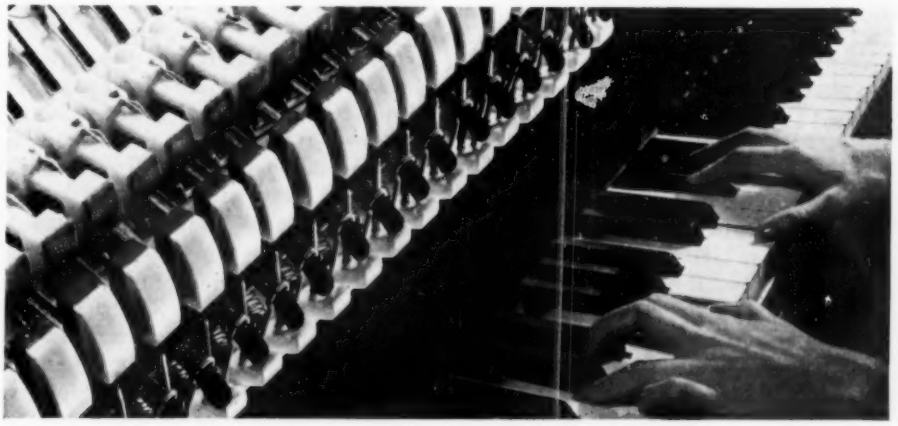
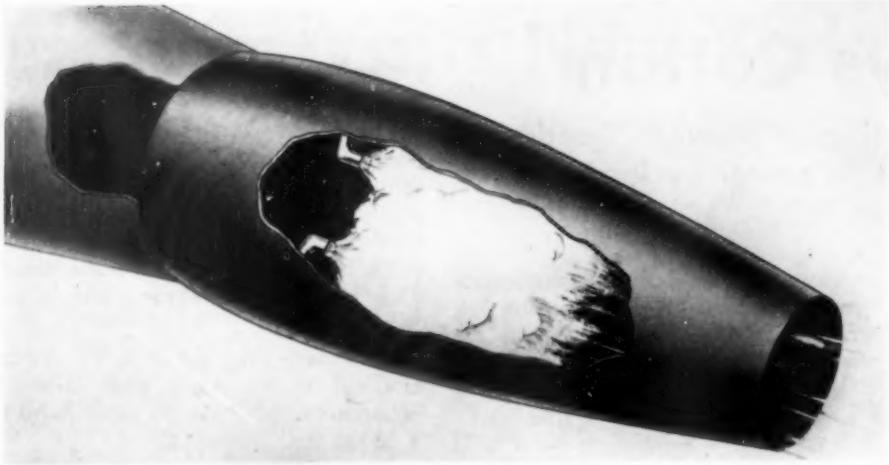


PIANO POUNDERS—Tenite plastic, magnesium and aluminum piano actions are weather- and moisture-proof. Since they do not shrink or swell like the usual wood parts, they do away with sticky notes.



AFTER BURNER—Fuel enters the after burner attached to the tail exhaust pipe of the jet engine, somewhat as shown in the artist's drawing, where its combustion adds about one-third increased thrust to the otherwise 1,000-mile-per-hour discharge.

ENGINEERING

After Burner Adds More Thrust to Jet Engine

➤ EMERGENCY SPURTS of speeds of jet-propelled combat planes will result from a development of the Ryan Aeronautical Company which the makers call an "after burner." It is a type of a ram-jet engine attached, as an integral part, to the after end of the jet engine. It will be used when needed by the flip of a switch.

The combination might be described as a ram-jet attached to a turbo-jet power plant. The turbo-jet develops the high-pressure gases that give thrust to the plane and also operates the compressor that gathers in the air whose oxygen is needed for combustion.

The ram-jet effect is obtained by spraying fuel into the special tailpipe where its burning adds mass and velocity to the speeding gases of the jet stream. It burns because there is a plentiful supply of unburned oxygen in the jet stream from the turbo-jet.

Ryan officials claim that this is the first device of the sort specifically designed for regular use in flight. It can also be used in take-off. The added thrust, with jet planes already flying at more than 600 miles an hour, may assist a plane in breaking through the so-called air compressibility barrier encountered as planes approach the speed of sound. The device adds more than one-third to the power plant's normal propulsion thrust.

The development and testing of the device has now about reached the end of ground-test stages. The tests were made in fixed engine stands on the earth. In them the stainless steel combustion chamber of the after burner becomes a roaring blast furnace shooting out a colorless, searing jet stream, revealed only by heat waves, at over 1,000 miles an hour.

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ANTHROPOLOGY

Peruvian Village Shows Culture Centuries Old

➤ A SMALL village on the coast of Peru, Smithsonian Institution scientists found, is a living museum of ways of life nearly 1,000 years ago and also the nursery in which a new culture can be seen in the process of developing.

Moche is located on the new Pan American paved highway only about 15 minutes' drive from the large modern city of Trujillo. But despite its lack of geographical isolation, the people up to now have kept themselves comparatively remote from modern influences so that life there still goes on in much the same old combination of Spanish and Indian ways.

The new road may be expected to make a difference.

The Moche culture is much older than the Spanish Conquest. They had the largest single adobe structure in the world and extremely realistic pottery designs. Evidence has been found of considerable agricultural development, including irrigation ditches.

Present residents of the village are direct descendants of these ancient people. They have lost their old language and now speak more or less the same Spanish that is the language of other parts of Peru. But physically the ancient type persists.

Moche is a long way—five or six hundred miles—from Cuzco, famous center of Inca remains. But it is only a few miles from another center of archaeological interest, Chanchan, one of the most extensive sites of ancient culture.

The village was studied for the Smithsonian Institution by John Gillin, now of the University of North Carolina, who describes in detail his findings in a new report of the Institute of Social Anthropology.

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EDUCATION

Texts Behind Children In the Use of New Words

➤ SCHOOL books intended to build the vocabulary of children are 'way behind the children themselves in use of new words.

Editors of school "readers" don't realize that children read newspapers and magazines as well as many books, Dr. Robert H. Seashore, psychologist at Northwestern University, commented in discussing results of a study made in his department.

The average child adds 5,000 new words to his vocabulary every year, it was found. The average textbook of reading introduces only 500 new words in the same time. A child in first grade already knows about 16,000 basic words plus others derived from them, including some not in abridged dictionaries, the study revealed.

Vocabularies of both children and adults have been greatly underestimated because of faulty methods of measurement and misinterpretation. Those tested were not given a chance to show all that they know, Dr. Seashore indicated.

Counts of all the different words used by great writers show that Milton used only 11,000; Shakespeare, 16,000 and Victor Hugo, 20,000. From this people reasoned that if Shakespeare used only 16,000 words, then our own everyday vocabulary must be much smaller. Actually, we have no estimate of how many words Shakespeare considered in writing his works, Dr. Seashore said.

It is an interesting coincidence that in Shakespeare's works which are known and loved by so many people, he used exactly the number of words included in the average first grader's vocabulary.

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ASTRONOMY

Finding Faint Star Details

Photoelectric photometry has been improved so that the light intensities of even the sixteenth magnitude can be measured.

➤ ASTRONOMERS have an improved method for learning details about faint stars, on which even the most powerful telescopes bring only vague information. The method, called photoelectric photometry, enables scientists to measure weak light intensities with unprecedented accuracy.

Dr. Gerald E. Kron, assistant astronomer in the University of California's Lick Observatory and a leader in developing the improved technique, says photoelectric photometry permits operation of the 36-inch refractor at Lick as effectively as a 100-inch instrument could be operated by usual methods.

With this refracting telescope Dr. Kron has observed stars of the fourteenth magnitude, and stars of the sixteenth magnitude are within reach. The brightest stars observable with the 36-inch instrument by previous methods have been of the tenth magnitude.

Photoelectric photometry was pioneered in this country by Dr. Joel Stebbins of Washburn Observatory, the University of Wisconsin. Dr. Kron's refinement of the technique depends primarily upon the invention, just before the war, of an efficient electron multiplier.

Light gathered in a telescope lens from a star is made to fall upon a photosensitive surface, which is in effect a photocell. The electrons emitted from this surface are amplified by the electron multiplier. The instruments are so sensitive that a few hundred electrons per second can be measured.

Dr. Kron has already applied the technique to the study of stellar atmospheres, and has verified a unique theory of Harvard astronomers about the make-up of the atmosphere of one of the rare Wolf-Rayet type stars.

The Wolf-Rayet stars are unusual primarily because of their thick atmospheres and because they are two-star planetary systems, the stars eclipsing each other twice in each revolution.

Because of these eclipses the light coming from these stars is constantly changing. Dr. Kron's systematic studies of a Wolf-Rayet star through several revolutions disclosed that the thick atmosphere absorbs light independently of its wavelength, unlike the differential absorption with wavelength by the gaseous atmosphere of the earth.

Dr. Kron says that the peculiar behavior of light emanating from these stars can be explained on the basis of the theory propounded by the Harvard astronomers that the atmosphere of the Wolf-Rayet stars is made up of a cloud of electrons. He has also found that many stars which appear to have a uniform brightness over the whole surface actually have decreasing brightness toward the edges.

Aside from bringing out new fundamental facts, photoelectric photometry greatly speeds up astronomical research in problems where it can be used. In 10 seconds Dr. Kron took a reading on a fourteenth magnitude nebula which ordinarily would have taken about 10 minutes to record on a photographic plate.

Several lifetimes of new research have been opened up as a result of the application of the refined photoelectric photometric technique to astronomy, Dr. Kron says.

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ELECTRICITY

One in 365,000 Chances Of Death by Lightning

➤ YOUR CHANCES of being struck by lightning this summer are one in 365,000. Some 400 persons will probably be killed during the year in the United States. It is a small number, however, when compared with the probable 40,000 who will suffer death from automobile accidents.

The estimate is that of E. L. Harder, Westinghouse lightning engineer, whose primary job is the development of instruments and devices to protect homes, factories and electric power lines from lightning damage. As an example of accomplishments, modern protective devices now cut power interruptions on power lines almost to the vanishing point, although every 50 miles of such lines are hit some 50 times every year.

LIGHTNING HISTORIAN — Lightning writes its own history on the wheel of this "fulchronograph". Striking a tall mast, the lightning sets up an electric current which magnetizes small slices of steel inserted in the slots on the rim of the wheel. By measuring the amount of magnetism, engineers can determine the strength and duration of the thunderbolt.

He explained a Westinghouse "trap" that virtually picks lightning from the sky, shuttles it about, and makes it take its own picture on an automatic camera. It makes "fingerprints" on high-speed and low-speed wheels within the instrument, which is called a "fulchronograph," making records, which along with the photographs, can be studied at leisure.

These "traps" are exposed in elevated positions, one being 535 feet from the ground on the roof of the University of Pittsburgh's Cathedral of Learning. Here lightning strikes a steel mast from which it is channeled through various protective devices to test their efficiency.

Information gathered over a period of years has catalogued thunderbolts so thoroughly that engineers can forecast with reasonable accuracy when and where they will strike on the average, and what their force will be. It is on the basis of this knowledge that the probability of death from lightning is estimated.

Science News Letter, August 2, 1947

Large male *otters,* including their heavy tails, are sometimes four feet in length.

OCEANOGRAPHY

Roughest Ocean Bottom Between Korea, New Guinea

➤ THE ROUGHEST place in the world, topographically speaking, is the stretch of sea bottom and islands that lie between Korea and New Guinea. It was a rough place during the late war, too—especially rough on the Japs as they got pounded back from the farthest south of their conquests.

Partly as a result of the many soundings taken by our warships as they cruised in that region, a new chart of the world's most rugged ocean bottom has just been published by the Hydrographic Office of the U. S. Navy.

It shows the world's deepest wrinkle, a 40,000-foot difference in elevation between the bottom of the Mindanao trench and the tops of the highest mountains in the eastern Philippines. There is a whole chain of such ocean-bottom trenches, off Japan, the Bonins, the Marianas, Yap and the Palaus, with northward extensions as far away as the Aleutians. Total length of the chain is more than 6,000 miles.

This area is also the world's roughest region in volcanic and earthquake activity. Earthquakes and volcanic eruptions are both more numerous and more violent there than elsewhere. One of the greatest earthquake disasters in history, the Tokyo Bay shock of 1923, took place near the northern end of the Korea-New Guinea region. And by far the most terrific volcanic explosion, that of Krakatao in 1883, occurred a little to the west of its southern end.

Science News Letter, August 2, 1947

ENGINEERING

Gas-Turbines May Lead Airplane Propulsion Field

➤ GAS-TURBINE engines are destined to play an increasingly important part in airplane propulsion, judging from discussions at the meeting of the Institute of the Aeronautical Sciences in Cleveland. Special problems being encountered were discussed by experts.

The great increase in activity in the aircraft gas turbine field in recent years has focussed attention on problems associated with the attainment of very high efficiency of the various turbine components, John E. Talbert and J. C. Smith, Wright Aeronautical Corporation, told the engineers. Design work is progressing at a rapid rate, they declared.

Combustion chambers for gas turbines are developed rather than designed, William R. Hawthorne, Massachusetts Institute of Technology, told the group. Early in the design of an engine, he stated, it is necessary to settle the overall arrangement and major external dimensions of the combustion system, for these in turn influence the general arrangement of the engine. He presented a method for determining the influence of combustion chamber dimensions on the engine performance.

Operation of aircraft gas turbines involves many factors requiring automatic compensation, such as wide variation in ram pressure, temperature, turbine speed and altitude, stated M. A. Edwards and . D. Thompson, General Electric Co.

These and other variables must be satisfactorily controlled to give the best performance and reliability for this type of power-plant. The control system must make available the maximum range and rates of change in thrust, at the same time safeguarding continuous stable operation of the turbine and compressor. The control of jet nozzle area and propeller pitch are very important factors in this respect.

Science News Letter, August 2, 1947

MEDICINE

Vitamin D Treatment For Rickets Dangerous

➤ SOME PRESENT applications of vitamin D in the treatment of rickets in children are unsafe and may produce severe damage.

This has been disclosed by animal research by Dr. Agnes Fay Morgan, nutrition expert in the University of California College of Agriculture.

Dr. Morgan made her tests by feeding a single large dose of vitamin D to eight young dogs, from 29 to 34 days old, which were affected by rickets. She fed them 150,000 to 250,000 units of vitamin D per pound of body weight. Their diet otherwise was well balanced.

Damaging effects became apparent immediately, and so severe was the reaction that three dogs died within two weeks and a fourth three weeks later.

Dr. Morgan pointed out that infants frequently are given from 50,000 to 100,000 units of vitamin D per pound of weight to combat rickets, the total dose often being 600,000 units.

The lower dose for humans is not enough smaller to warrant complete confidence in the safety of this rickets treatment, Dr. Morgan asserted.

Science News Letter, August 2, 1947

IN SCIENC

ZOOLOGY

Indian Elephant Babies Come to Philadelphia Zoo

See Front Cover

➤ TWO BABIES, each weighing about 1700 pounds, journeyed from Ceylon to the Philadelphia Zoo. Estimated to be two and a half years old, they are both Indian elephants. Patsy, five feet and five and a half inches tall, tops Peggy by two inches.

Patsy and Peggy are good live lawnmowers; they prefer grass to other kinds of food.

Science News Letter, August 2, 1947

RESOURCES

Government Buys Control Of Helium from Navajos

➤ HELIUM gas in the Rattlesnake oil field on the Navajo Indian Reservation in New Mexico is now under the control of the U. S. government, by agreement with the Navajo tribe and two private oil companies.

The Rattlesnake field, covering some 7,800 acres, produces gas containing 7.63% of helium, considerable carbon dioxide, and a large amount of nitrogen. This concentration of inert constituents renders the natural gas noncombustible.

In acquiring the rights to the field the government will pay the Indian tribe $147,799 as advance royalty and rental for 25 years, and will pay $166,594 to the oil companies for rights in their prior leasehold interests in the area.

Construction of a helium plant to process this gas was started by the U. S. Bureau of Mines in April, 1943. The demand for helium for war purposes was over by the time the plant was completed a year later. It was left in standby condition, but can be operated when needed.

The United States is the sole producer in the world of helium gas, the safety gas used in balloons and dirigibles. Other plants are in Texas and Kansas, a total of three. Two of these are now in standby condition. The Exell, Texas, plant alone can meet all present peacetime demands.

Science News Letter, August 2, 1947

NCE FIELDS

MEDICINE

Dose of BAL Reduces Lead in Bloodstream

➤ LEAD in the human bloodstream can be reduced in concentration with dramatic suddenness by single doses of BAL, the British antidote for the deadly war gas, lewisite, developed in this country during World War I. This has been demonstrated in the laboratories of the University of Cincinnati college of medicine by Drs. Henry W. Ryder, Jacob Cholak and Robert A. Kehoe.

Using seven human subjects whose blood contained lead in varying concentrations, they were able to produce a steep drop in blood-plasma lead in about seven minutes. Activity of the kidneys in getting rid of lead seems to have been increased, for the poisonous metal appeared in their secretion in higher concentration within an hour, with a return to the pre-dose level in from eight to 24 hours.

Unfortunately, BAL cannot be recommended outright for treatment of lead poisoning. The three researchers point out that this chemical, whose full name is dithiopropanol, is a "potentially dangerous drug." Repeated doses of it caused such disagreeable symptoms as high blood pressure and general muscular aching. They do regard it, however, as "potentially of great physiological importance."

Details of the work are published in *Science* (July 18).

Science News Letter, August 2, 1947

MECHANICS

Germans Make Combination Boring, Milling Machine

➤ GERMANY produced few new types of machine tools during the war, but one development discovered since has possible uses in America. It is a combination boring and milling machine for use in metal shaping in which one operation follows another without removal of the metal being worked from the machine. Details of the machine were revealed by the U. S. Department of Commerce.

Boring and milling machines are widely used in metal industries. They are usually separated. Bores or drill holes are made for many purposes. Milling consists of machine processes of cutting and shaping for special uses.

In the German development, the combination boring and milling machines were made to increase precision and save resetting the work from machine to machine. Work is moved onward from one set of cutters to the next. Time is saved in the process, but the particular advantage is the precision resulting from the relief from the necessity of moving materials from one machine to another. A report of this machine and other new German machine tools may be obtained from the department for six dollars in photostat, or two dollars in microfilm.

Science News Letter, August 2, 1947

ENGINEERING

Peat As Fuel To Lower Iron Concentrates Costs

➤ PEAT FOR FUEL might be used to reduce at low cost the low-grade iron ores of Minnesota into concentrates for shipping when the high-grade ore of the Mesabi range is exhausted, the American Society of Civil Engineers was told at Duluth, Minn., by Robert L. Fitzgerald of the Duluth Steam Corporation.

He described experimental work on the use of peat already under way. Half the nation's peat deposits are in northern Minnesota, adjacent to the state's famed iron ranges, he said. Coal for the purpose would have to be obtained from distant points.

Russia, he stated, is processing from 50 to 60 million tons of bog peat into gas and power to serve industrial needs. High peat transportation costs are eliminated by converting the peat into electric power and fuel gas at the site of the bog. Production of the fuel has been greatly stepped up by mechanical handling. Soviet chemists are determining means by which various chemicals can be obtained from the peat.

Mr. Fitzgerald told the engineers about Minnesota work in forming peat into pellets, which may "be the answer to the local metallurgical use of this abundant supply of local low-grade fuel." Peat containing 85% moisture can be easily formed into pellets, he said, the size of which can be controlled. The smaller sizes dry rapidly, and the dried pellets are hard and will not fracture when subjected to rough handling.

Science News Letter, August 2, 1947

ENTOMOLOGY

Insecticidal Wallpapers Kill Flies on Contact

➤ WALLPAPER that kills flies that try to roost on it, and wrapping paper that will do the same thing to any insect nosy enough to investigate your groceries are among the newest things in DDT anti-insect tactics. Samples of such paper have been received for testing by the Bureau of Entomology and Plant Quarantine in Washington. The tests, however, will be conducted in the Bureau's laboratory at Savannah, Ga.

DDT is a known impregnant of these "fortified" papers. Apparently, however, something else has been added that has a quicker knockdown effect; for though DDT is sure, it is a bit slow. Chlordane, a quick-acting insecticide already in commercial production, seems the likeliest possibility.

It is claimed that samples of the new insecticidal wallpaper as much as two years old are still sure death to flies alighting on them.

Science News Letter, August 2, 1947

PUBLIC HEALTH

Polio Cases Below Normal As Epidemic Fear Lessens

➤ INFANTILE paralysis cases were less than half the five-year median figure for the week ending July 19, and the danger of a polio epidemic this summer is diminishing.

Total cases reported to the U. S. Public Health Service for the week ended July 19 were only 157, compared with a five-year median of 369. The week's cases showed an increase over the preceding week, when 125 cases were reported, but they were far below the 666 cases of polio for the corresponding week last year.

This year's total cases are only 1,575 through July 19, compared with five-year median of 2,048 and last year's 3,256.

In bad polio years, the number of cases usually begins to soar before this time, Public Health Service officials pointed out. There may yet be outbreaks of infantile paralysis in some localities, but this looks like a healthy summer for the nation as a whole.

California was reported to have the most cases, 24, while Ohio and New York have jumped to 13.

Science News Letter, August 2, 1947

MEDICINE

Treatments Paralyze Poliomyelitis

Discovery of five types of brain damage led to more specific treatment, cut death rate to 30% in usually fatal form of infantile paralysis.

By JANE STAFFORD

➤ INFANTILE PARALYSIS victims this summer have a better chance than ever before to escape death and severe crippling.

There should be no deaths in four of the five previously most dangerous forms of the disease.

Only one in five is likely to be left severely paralyzed.

Many can be relieved of the cold, clammy, swollen feet and hands that plague patients who have recovered from the acute stages of the disease.

Some patients, even some who had the disease years ago, can be given greater strength and use of long weakened, almost useless muscles.

Cure Not Discovered

These accomplishments have come without the discovery of any miracle drug to cure the disease or any specific remedy for warding it off. The cure and preventive of infantile paralysis, or polio as many call it, are yet to be discovered.

The biggest life-saving accomplishment was made in the frantic days last summer when cases throughout the nation were climbing to a near-record total of more than 25,000, and deaths were mounting into the hundreds.

Minnesota was for weeks the hot spot of the epidemic. Cases in that state alone reached a total of 2,875. Almost 200 of them were of the dreaded, usually fatal bulbar type. Patients with this type of the disease used to suffocate or choke to death, usually within a very short time. Although they were dying because they could not get enough air into their lungs, the ordinary iron lung did not help them and was even dangerous in some cases.

When these patients with bulbar polio began coming to the University of Minnesota Hospital, in three or four times the number usually expected in an epidemic, a special team of medical scientists was alerted from the University's staff. They are: Drs. A. B. Baker, Joe R. Brown, James O. Elam, Clifford Grulee, Jr., and Allen Hemingway. A wartime secret development of the Army Air Forces and March of Dimes funds from the National Foundation for Infantile Paralysis were sent to help them.

At the end of the epidemic, only 56 of the 183 bulbar cases they treated had died. One of these should have lived, would have been saved if his parents had consented soon enough to one of the new treatments. Some of the 56 died before the doctors had made the discoveries that led to the new treatments. At that, the 56 deaths, representing a fatality of 30%, was far below the expected 90% to 100% fatality.

Clues from the dead bodies of the first victims led to the new methods of treatment which saved other victims, will save still more in the future.

Most important was the discovery that bulbar polio can take five different forms, each with different symptoms and needing a different and specific treatment. When this discovery was made, the doctors began saving patients.

Bulbar polio gets its name from the fact that in this form, the virus cause of the disease attacks a small bulb or cone of nervous tissue at the base of the brain. This nervous tissue is called the medulla oblongata. Formerly it was supposed that the infection involved the whole medulla. The University of Minnesota scientists found that any of five regions of the medulla may be involved.

PHYSICAL THERAPY — Stair-climbing is part of treatment that overcomes handicaps.

One type of bulbar polio they now call the cranial nerve nuclei type. In this type the nerves controlling the muscles of the face and throat are affected. The patient has trouble swallowing, which not only makes it hard to feed him but, more important, brings the danger that he will choke to death from accumulations of mucus and other material. To save the patient, the doctor must keep the airways free of this obstructing material.

If this cannot be done by ordinary measures, such as suction through the mouth, an opening must be cut into the windpipe from outside the throat. This operation is called tracheotomy. The patient breathes through a tube inserted into the opening. Refusal to permit this operation in time cost the life of one victim in the Minnesota epidemic. He was the only one of the 100 patients with cranial nerve nuclei polio to die.

Lack of Oxygen

Also located within the medulla or bulb of the brain is the respiratory center which controls the rate of breathing. Patients with respiratory center type of bulbar polio lose control of the rhythmic rate of breathing. As a result, they do not get enough oxygen in their blood and may quickly die.

The rate of blood flow, as well as the rate of breathing, is controlled by a special region of the brain bulb. When this circulatory center is attacked by the polio virus, the patient's pulse rate changes, his blood pressure falls rapidly and he shows the general symptoms of a person in shock. Fortunately, this circulatory center type of the disease is rare, because it is the one most difficult to treat successfully. There is no specific treatment for it except oxygen, which has not been too helpful.

Fourth of the newly defined types of bulbar polio is the encephalitic type, in which the patient shows signs of confusion, apprehension and anxiety. The symptoms are chiefly due to lack of oxygen in the brain.

The bulbar cervical spinal type is the fifth. In this type both the bulb and the adjacent areas of the spinal cord may be involved. The patients may have a mixture of the symptoms of the other types and in addition may have paralysis of the upper torso, particularly the muscles of the chest controlling breathing.

Treatment is given according to the symptoms of the patient which show the type of bulbar polio he is suffering. To save lives, doctors must be quick and keen in interpreting the symptoms and applying the suitable treatment. The tracheotomy operation, feeding by a tube through the nose and oxygen, are among the measures used. A special kind of iron lung has been built with a punched-in head to leave room for the tracheotomy.

Iron Lung Problems

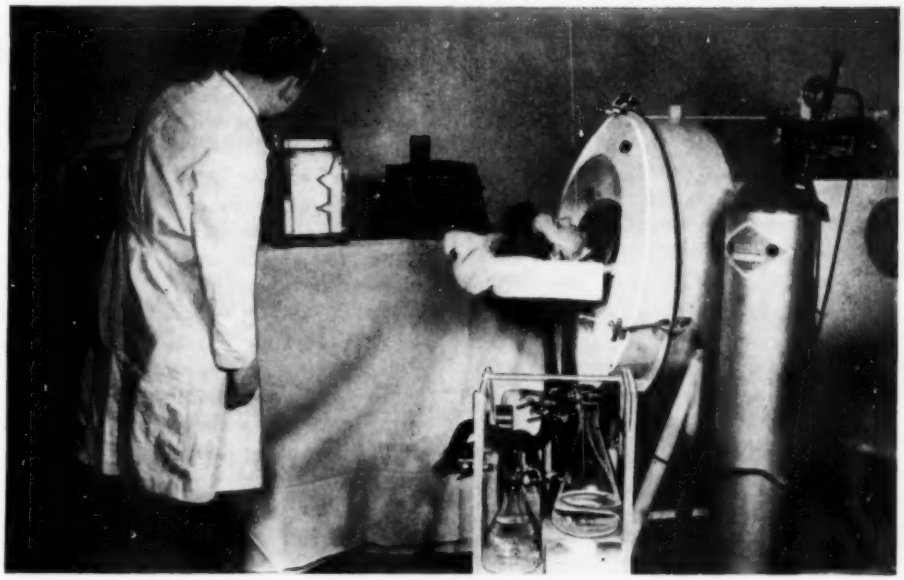
When a patient needs oxygen, how much he needs, and how long he can safely remain out of the iron lung when he is beginning to improve are vitally important questions which in the past have had to be answered by the nurse's or doctor's observations. Even with constant, skilled attendance, it is often hard to answer these questions accurately and quickly. The amount of oxygen within the blood and cells of the body may vary widely within a few seconds. By the time the oxygen lack produces symptoms that nurse or doctor can see, it may be so great that the patient is in grave danger.

A dual photoelectric device which clips on the patient's ear helped the Minnesota doctors answer vital questions about oxygen lack and save patients' lives. The device, called an oximeter, was invented by Dr. Glenn A. Millikan, son of the Nobel Prize winner, Dr. Robert A. Millikan, and himself a distinguished physiologist whose promising career was stopped by a fatal accident this spring.

Record of Oxygen

The oximeter, operating through two color filters, gives an immediate and continuous record of the amount of oxygen circulating in the bloodstream. It was first used by the Army Air Forces to combat oxygen lack in high altitude flying. Part of the recording equipment was a war secret. The instrument was released last summer to help fight polio.

With more patients being saved from polio death, physical therapy, which overcomes the crippling and paralysis the diseases leaves in its wake, becomes more than ever important. Modern methods now make it possible for 50% of the victims to recover without any handicap and for another 20% to escape with mild, non-handicapping paralysis. But these good results depend to a large extent on early diagnosis and early, continuous use of physical therapy.



FIGHTING POLIO—New life-saving equipment for fighting polio consists of (1) new type iron lung with punched out head to permit access to (2) tracheotomy tube which provides open airway in the patient's throat for (3) giving oxygen that has been bubbled through humidifying apparatus and (4) oximeter clipped to patient's ear to show at once when oxygen in patient's blood falls to dangerous level. Dr. James E. Olam, University of Minnesota physiologist, is reading the oximeter record.

Treatment for infantile paralysis is expensive, but no parent need worry about the cost. The National Foundation for Infantile Paralysis will pay part or all of the cost of treatment for any patient needing such aid. The chief jobs for parents are to avoid getting panicky or letting the children get panicky, to be alert for symptoms that might mean polio, to call the doctor promptly if these symptoms develop and to follow his advice about treatment.

Science News Letter, August 2, 1947

MEDICINE

Better Germ-Killers Built in Laboratory

➤ NEW CHEMICAL drugs that may be better than the wonder germ-killer, penicillin, are being built in the laboratory, the International Chemical Congress in London was told by several teams of chemists.

Intermediate compounds that lead toward new forms of penicillin have been prepared, Dr. A. H. Cook reported for a group working under Sir Ian Heilbron of London's Imperial College of Science.

The synthesis of benzilpenicillin was announced by Prof. Vincent du Vigneaud of Cornell Medical College, New York City, who first synthesized penicillin itself.

Many steps toward making artificial streptomycin, the other wonder mold chemical, have been taken, Dr. Karl Folkers of Merck Laboratories in New Jersey, told the congress. The synthesis of this drug will be more difficult than that of penicillin, he admitted.

Science News Letter, August 2, 1947

YOUR

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AND ITS CARE

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ENTOMOLOGY

"Everybody Works" Fly War Being Waged in Evansville

➤ AN "everybody works" fly war is being waged in Evansville and Vanderburgh County, Ind., to rid this community of that dangerous and pesky insect menace, the housefly.

The local war on flies was started by the Evansville Press as a part of the Science Service National Anti-Fly Campaign. The fight on flies in this section is now being conducted with the cooperation of the city-county health department, city and county administrations and the Evansville Chamber of Commerce.

As A. P. Eberlin, secretary-manager of the Chamber of Commerce, explains, "An 'Everybody Works' campaign will do the job."

City workmen launched the attack by spraying DDT solution on city dumps, garbage cans, ash pits, trash bins and alleys. Local fly and mosquito breeding areas were treated with DDT.

Creameries, dairies, restaurants, taverns, soft drink places, clubs, hospitals and other establishments were covered by the DDT offensive.

Everyone in the area has been urged to wage war on flies in a five-point individual anti-fly program:

1. Supply your industrial or business property and home with sufficient DDT solution, in aerosol bomb, spray or paint form. It can be obtained at modest cost from drug stores, paint stores, groceries, service stations, etc.

2. Follow carefully detailed instructions that come with every package or can of DDT.

3. Use DDT liberally in your business or industrial establishment and in your home—in your kitchen, basement, dining room, on your porches, screens and in your garage. Make both your home and your place of business fly-free.

4. Encourage your friends and business associates and employees to follow the same program.

5. Boost the campaign in your lodges and clubs and publicize it in club news letters and house organs.

Science News Letter, August 2, 1947

Throw It Away!

Or give it to a museum.

Science Service is conducting with the aid of cooperating newspapers the National Anti-Fly Campaign. The aim is to make the housefly as extinct as the dodo.

Help the Science Service-using newspaper in your area in this important campaign.

Complete instructions on how to get rid of flies are contained in Dr. Frank Thone's articles carried in cooperating newspapers or in the June issue of CHEMISTRY, Science Service monthly. Send 25 cents to Science Service, Washington 6, D. C., and ask for the Anti-Fly or June issue of CHEMISTRY.

ENTOMOLOGY

Boy Scouts Shock Troops In Birmingham Fly War

➤ ARMED with DDT-filled spray guns, boy scouts are the shock troops in Birmingham, Ala.'s all out war on flies.

As the Birmingham Post's Anti-Fly editor, Mel Snyder, explained, the city's Health Department became "the arsenal for a fly-less democracy" when health officials supplied 750 gallons of DDT solution to be "shot" at the insect enemy by scouts.

The Post launched the fly war in Birmingham as a part of the Science Service National Anti-Fly Campaign.

When boy scouts volunteered to do outdoor spraying, the Post challenged, "Housewives . . . you get the ones indoors."

With the support of civic leaders and city and county officials, the Birmingham campaign was headlined by a two-day chemical assault on flies by the boy scouts.

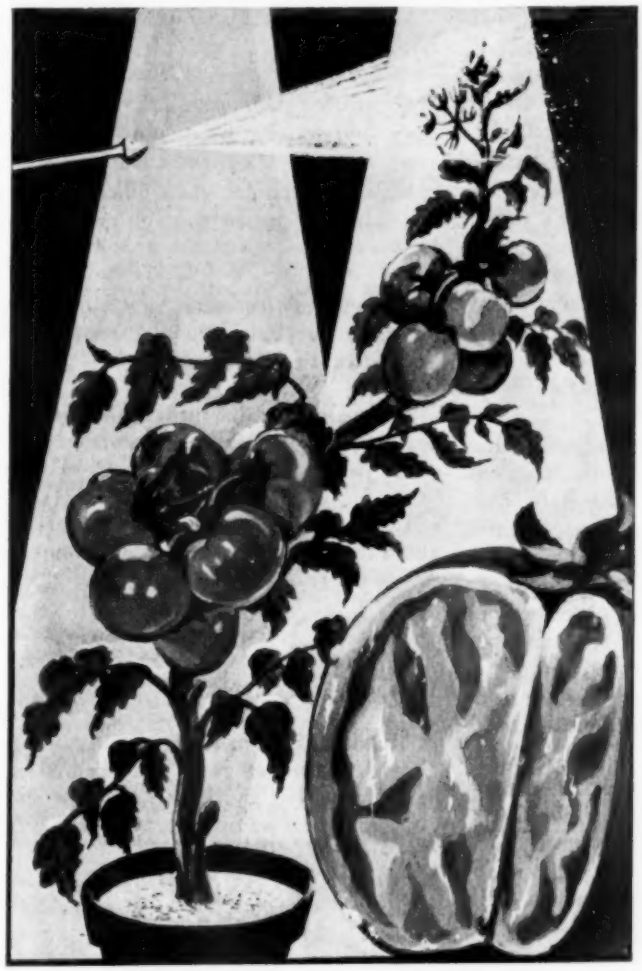
Birmingham's scout troops were assigned various areas and met at central locations in each area to receive their supply of DDT. Sprayers for the fly war were supplied by the scouts themselves. For two days, adult leaders at the 16 DDT distributing points were kept busy directing the "ammunition loading" as the scouts searched out fly-breeding spots.

While flies in Birmingham were reduced by the two-day attack, health officials and leaders in the campaign explained that the big achievement of the campaign was to give the people of the city "the DDT habit."

Science News Letter, August 2, 1947

An electric *lamp* for underwater work has been developed; it can be used only under water because the liquid is necessary to keep the glass cool from the 1,000-watt light within, with filaments almost touching the bulb.

Grow Plants In Your Home



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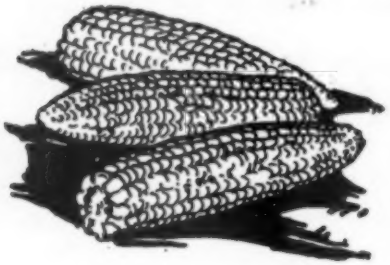
HORTICULTURE

NATURE RAMBLINGS

by Frank Thone



Sweeter Sweetcorn

➤ URBANITES who grew up in Iowa or Wisconsin or Maine or New Jersey have long complained that the sweetcorn they get in New York or Pittsburgh or Chicago wasn't really fit to eat. That was no mere effect of nostalgia. They were quite correct: sweetcorn as it has been offered in city markets for many years hasn't been really good.

Trouble is, it has taken too long for the corn to get from cornstalk to kettle. Past harvesting and marketing methods usually made a 48-hour time gap at least; often more than that, especially if the corn were being shipped from a distant point. That is much too much, if the corn is to remain really sweet.

Other vegetablees can be picked short of maturity and permitted to ripen on the road or even on the dealer's stand. Their sugar content increases during the ripening process. With sweetcorn the reverse is tr e. The more mature it becomes the less sugar it contains and the more starchy it is. It must not only be picked immature, it must be eaten that way or it is no good.

There is an enzyme in sweetcorn that gets to work on its sugar the moment the cob is severed from the stalk, converting it into starch. Corn canners found that out long ago. They begin a day's operation with corn picked very early the same morning—even by lantern light. Every ear left on the floor when they shut down for the night is discarded. Corn 24 hours old is unfit to pack, by modern cannery standards.

At long last, city consumers of fresh sweetcorn are beginning to get the same kind of a break. Under the leadership of some energetic "dirt scientists" at several state agricultural experiment stations, dawn-picked ears are rushed direct to retail dealers by truck and are ready for sale when the early housewives come a-marketing. These early birds get the wormless ears, and the juiciest.

Not even this would satisfy some corn gourmets, who insist that if an ear is off the stalk longer than ten minutes it is no longer sweetcorn, but just corn. A few extremists even carry kettles of hot water into the corn-patch with them, husk the ear before snapping it off, and pop it into the water instantly.

To do this kind of thing, however, requires that you grow your own corn. For people who have to live and work far from the nearest possible garden-plot, the newer marketing methods offer the best possible substitute.

Science News Letter, August 2, 1947

A Maryland orchardist saved an *apple orchard* threatened by frost last spring by cruising back and forth over it at 50 feet in a plane; the plane warmed the air from its exhausts and by keeping it in motion.

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Do You Know?

Men have kept *fishes* as pets for over 2,500 years.

A female *giant panda* in the New York zoo weighs 375 pounds.

Male Australian duck-billed *platypuses* have a poison spur on each hind leg.

Commercial *canning* of fruit and vegetables in France now exceeds pre-war quantities.

Ice cream manufacture in the United States during 1946 was enough to give every person 21 quarts.

Engineers and farmers are reshaping the surface of the *earth* in the present era to a greater extent than nature.

Boric acid, used as an *eye wash,* contains boron, a non-metallic element used in hardening certain steel alloys.

"Polder" is the European term applied to reclaimed *land* lying below sea level, protected by dikes and kept dry by mechanical pumping.

Animals of the African plains are unafraid of automobiles, a wildlife painter states; it is against the law to hunt from a car.

Savasol is a kerosene derivative used to kill weeds among carrots, 2,4-D kills broad-leaved weeds on lawns, and ammate kills poison ivy.

The Belgian *horse,* massive, compact and powerful, was developed in the past century by crossing selected animals of the ancient Brabant type.

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Books of the Week

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CAREERS FOR YOU AND YOUR CAMERA—Graflex, Inc.—publ. by the firm, 30 p., illus., paper, 15 cents. A discussion of the various special fields in which competent photographers make a living.

DISEASES TRANSMITTED FROM ANIMALS TO MAN—Thomas G. Hull—*Thomas,* 3rd ed., 571 p., illus., $10.50. Expanded material due to information concerning the spread and control of the rickettsial and virus infections obtained during the war together with history, epidemiology, bacteriology, pathology and clinical symptoms make this a very serviceable handbook.

EXISTENTIALISM—Jean-Paul Sartre—*Philosophical Lib.,* 92 p., $2.75. An exposition of his philosophy which is to face the implications for personal action in a universe without purpose.

EXPERIMENTAL CASTING PLASTICS—Thomas A. Dickinson—*Plastics Res. Co.,* 24 p., illus., $2. The result of an engineering research project, this book is devoted to specific formulae and new simple methods of making rigid or flexible patterns, molds and casts. It is an attempt to combine the features of the text book or reference and limited-circulation report.

FOUNDATIONS FOR TEACHER EDUCATION IN AUDIO-VISUAL INSTRUCTION — Elizabeth Goudy Noel and J. Paul Leonard—*Am. Council on Educ. Studies.,* Series II, 60 p., paper, 75 cents. A guide for the use of those who are initiating, developing, or revising programs designed to prepare teachers competent in the use of audio-visual methods.

GREAT ENGINES AND GREAT PLANES—Wesley W. Stout—*Chrysler Corp.,* 133 p., illus., free. A fine discussion of the development of the aircraft industry during the war with many photographic details of structure.

MEN AND VOLTS AT WAR: The Story of General Electric in World War II—John Anderson Miller—*McGraw-Hill,* 271 p., illus., $3.75. A dramatic story of the role of G. E. in helping to equip and maintain our fighting forces with the best possible technological equipment.

PLASTICS THEORY AND PRACTICE: The Technology of High Polymers—Charles C. Winding and R. Leonard Hasche—*McGraw-Hill,* 280 p., illus., $5. A text giving a broad view of the entire field of plastics: relation of chemical structure to physical properties, the six groups, commercial methods of manufacture, and evaluation.

SPECIAL TREATMENTS OF WOOD—*Northeastern Wood Utilization Council,* Bulletin 18, 103 p., paper, $2. Papers presented at one of the quarterly meetings of the above organization collected to inform wood-using industries of new processes and developments; emphasis on impregnation, fire-retardent processes, wood-bending, etc.

A STONE AGE CAVE SITE IN TANGIER—Bruce Howe and Hallam L. Movius, Jr.—*Peabody Mus. of Am. Arch. and Ethnol.,* Papers, Vol. XXVIII, No. 1, 32 p., illus., paper, $1. A preliminary report on the excavations at the Mugharet El 'Aliya, or High Cave, in Tangier; excellent drawings of artifacts are appended.

VIRUSES—Max A. Lauffer—*Penn. State College,* 62 p., paper, $2. From the Twentieth Annual Priestley Lectures sponsored by Phi Lambda Upsilon Honorary Chemical Society, a series of essays discussing viruses as molecules, as organisms, their size and shape, disintegration and relation to human welfare.

Science News Letter, August 2, 1947

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PUBLIC HEALTH

World Health Group Plans Easier Travel

➤ CHANGES in world sanitary regulations which will make it easier for international travellers to go from country to country are being studied by the World Health Organization Interim Commission.

Countries signatory to the WHO constitution have been asked by the Interim Commission for their views on alterations in current international sanitary conventions. Officials said they were checking to see to what extent world travellers have to submit to practices no longer essential to the modern system of health protection.

The WHO inquiry drew attention especially to the bills of health and consular visas now required by existing conventions. Abolition of these formalities was advocated by the 1944 Sanitary Convention and some countries have abolished the requirements by individual agreements. The possibility of general abolition was raised in the WHO letter.

Acting on the recommendation of its Committee on Epidemiology and Quarantine, the Interim Commission has appointed an expert committee to meet in September to consider amendments suggested by the governments in their replies.

Science News Letter, August 2, 1947

The Dent de Crolles near Grenoble, France, is said to be the deepest *hole* in Europe, being 2193 feet deep; this is 70 feet more than the Italian Great Hole of Preta.

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• New Machines And Gadgets •

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⚙ *TYPEWRITER LAMP, recently patented, is a tubular fluorescent light held over the machine on an adjustable stand, the tube being about the length of the typewriter platen. The lamp can light up the typing, show through a stencil, and illuminate the page being copied.*

Science News Letter, August 2, 1947

⚙ *DOLLIES, or roller devices for moving heavy boxes in factories or shops, consist of sturdy metal frames four inches high, each equipped with two steel rollers. Short pins on frame tops keep boxes from slipping. An adjustable rod to hold two dollies a fixed distance apart is available.*

Science News Letter, August 2, 1947

⚙ *BOOKBINDING adhesive is applied with a brush or mechanically, and dries in ten minutes to make a "tack-free" union that is strong, flexible, stable and lasting. No heating or thinning with water is required.*

Science News Letter, August 2, 1947

⚙ *HANDY SPRAYER for household use in controlling insect pests is a rubber bulb with a conical top which screws to the container. The nozzle on the top is set at an angle so that the spray can be directed where wanted. A squeeze of the hand provides the necessary pressure.*

Science News Letter, August 2, 1947

⚙ *EAR LAMP, for relief of ear aches and inflammation, concentrates infra-red*

or heat rays where needed rather than over a large area, as when hot water bottles or heating pads are used. The picture shows how it is held in position by head-bands.

Science News Letter, August 2, 1947

⚙ *DISPLAY CASE for vegetables and fruit circulates moisture-laden air that keeps the contents crisp and fresh without soaking. An automatic foot-control spray shut-off protects customers while they are selecting produce.*

Science News Letter, August 2, 1947

⚙ *BEDS and bed springs of aluminum are easily shifted about because of the light weight. Only the frame of the bed springs is made of this metal, but total weight is kept down to 38 pounds by replacing the ordinary spring coils with spring wire bent in a series of S-shaped loops.*

Science News Letter, August 2, 1947

⚙ *DIVING EQUIPMENT, reported from France, consists of a rubber covering for eyes and nose, and breathing facilities. Air, under 440 pounds pressure, is carried in flasks on the back and delivered to the mouth by tubes. Breath is exhaled through valves into the water. User can remain under water for 90 minutes.*

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Question Box

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In what way is 2,4-D an enemy? p. 69.

ANTHROPOLOGY
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Pictures: *Cover, Philadelphia Zoological Society; Monsanto Chemical Co., p. 67; Tennessee Eastman Corp., p. 69; Ryan Aeronautical Co., p. 70; Westinghouse, p. 71; National Foundation for Infantile Paralysis, p. 74.*

Where published sources are used they are cited.